UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
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January 27, 2011

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Subject: Comments on Idaho Power Company's Water Quality Application for the Hells Canyon Complex Hydroelectric Project----Adams and Washington Counties, Idaho and Baker, Malheur and Wallowa Counties Oregon -----Comments Hells Canyon Hydroelectric Project FERC 1971

Dear Mr. Mullane and Mr. Burnell:

This letter provides the National Marine Fisheries Service's (NMFS) comments on the September 2010 Water Quality Application (Application) submitted by the Idaho Power Company (IPC) under Section 401 of the Clean Water Act (CWA) for the Hells Canyon Complex (HCC) Hydroelectric Project. NMFS does not support this application because it does not focus on the broader set of water quality issues at an ecosystem scale that affect anadromous fish in the Snake River.

We are providing additional information pertinent to IPC's 401 certification application, including recent information on the current status of Endangered Species Act (ESA) listed Snake River fall Chinook salmon (SR fall Chinook) which spawn, incubate, and rear in the Snake River downstream of the Hells Canyon Complex. SR fall Chinook are the species under our jurisdiction most affected by the quality of water discharged at the project.[1] Because SR fall Chinook are extant only in the Snake River downstream from the project and its tributaries, a broader consideration of how best to benefit SR fall Chinook in the Snake River would be more useful to your decision process than would a narrow focus on the Natural Seasonal Thermal Pattern (NSTP) standard. Your request specified your interest in NMFS's view of IPC's analysis of implementing ODEQ's Natural Seasonal Temperature Pattern (NSTP) narrative standard at the HCC. In attempting to respond to this request we recognized that there are differences among the parties on how to interpret this standard. EPA views the standard as applicable when needed to protect a designated beneficial use and has recommended applying the standard at the

[1] Threatened Snake River steelhead are also migrating in the Snake River downstream of Hells Canyon Dam during this time.

HCC from early September until October 23 to protect migrating adult Snake River fall Chinook. (letter of October 26, 2010, from Michael Bussell, USEPA, to Neil Mullane, ODEQ). In its 401 application, IPC has evaluated the standard on a year-round basis. Given this range of possible interpretations, we have chosen to evaluate the possible return of the Snake River to its natural thermal pattern on a year-round basis to better inform your decision.

Background and History

SR fall Chinook once ranged as far upstream as Shoshone Falls (River Mile 615) and spawned in the Thousand Springs reach of the Snake River. Since the turn of the century, large-scale water developments reduced the range of most anadromous fish in the Snake River basin, including SR fall Chinook. Before Brownlee Dam was completed in 1958 (River Mile 285), SR fall Chinook primarily used spawning habitat near Marsing, ID, downstream from IPC's Swan Falls Dam at River Mile 458.

The original Federal Energy Regulatory Commission (FERC) license for the HCC included passage measures that ended up not being effective, and IPC funded hatcheries as mitigation for lost access to historical upstream habitat. Since that time, upstream habitat has become unsuitable for spawning and rearing due to pollution and habitat alteration. The main causes of pollution are heavy nutrient loading that decreases the available oxygen and causes algae mats that reduce intergravel flow, as well as increased levels of sediment that could also cover the SR fall Chinook eggs before they get a chance to hatch. Due to the dams, Snake River fall Chinook are currently limited to a single population consisting of the Hells Canyon reach of the Snake River, and the lower reaches of the Clearwater and Grande Ronde rivers.

Relicensing

Throughout the relicensing process, NMFS has taken the position that the upstream habitat should be restored to support SR fall Chinook. NMFS submitted recommended terms and conditions to the FERC under Sections 10(j) and 10(a) of the Federal Power Act (FPA), including recommendations for improving upstream water quality and fish habitat, and for conducting fish passage studies once the habitat can support anadromous fish. FERC did not adopt these measures in its final environment impact statement (FEIS) for the project.

An extensive body of information has been developed through the relicensing process regarding: the potential for anadromous fish reintroduction into habitats upstream from the project; the water quality of the project and its effects on SR fall Chinook use of the receiving water; and approaches for mitigating those effects. Additionally, NMFS now has considerable information on SR fall Chinook and is developing a recovery plan for them.

Status of SR Fall Chinook

SR fall Chinook continue to be listed as threatened under the ESA. Their abundance has increased substantially since the late 1990s (Figure 1). In the most recent brood years for which full adult returns are available, the abundance of hatchery-produced fish has

increased and the abundance of naturally produced fish has decreased. There are several lines of information that suggest the decreased abundance of naturally produced fish is primarily due to the limited amount of rearing habitat that is available to juveniles in the Snake River especially in the upper Hells Canyon reach (upstream of the confluence with the Salmon River to Hells Canyon Dam).

Connor and Tiffan (2010)[2] indicated that juvenile SR fall Chinook abundance in the Snake River has increased over time (1995 to 2008), that the recent mortalities of fish from the upper Hells Canyon reach has increased by about 35% compared to the earlier period with little hatchery supplementation; and growth rates have decreased by about 0.6 to 0.7 (between tagging in the Snake River nearshore areas and Lower Granite Dam).

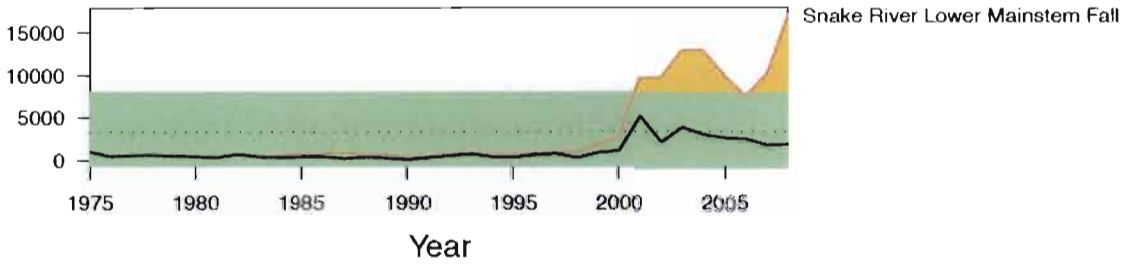

Figure 1. Abundance of SR Fall Chinook salmon in the Snake River by brood year. The black line represents naturally produced fish, the red line represents total abundance of naturally and hatchery produced fish; the dotted line represents the average total abundance across the period (green area denotes 1 standard deviation around the mean; orange area indicates exceedences above 1 standard deviation). Source: NMFS – Northwest Fisheries Science Center "Salmon Population Database: https//www.webapps.nwfsc.noaa.gov/ and NMFS unpublished data.

[2] Connor, W.P. and K.F. Tiffan. Research, monitoring, and evaluation of emerging issues and measures to recover the Snake River fall Chinook salmon Evolutionarily Significant Unit (ESU) - Annual Report 2008 (Chapter 2).

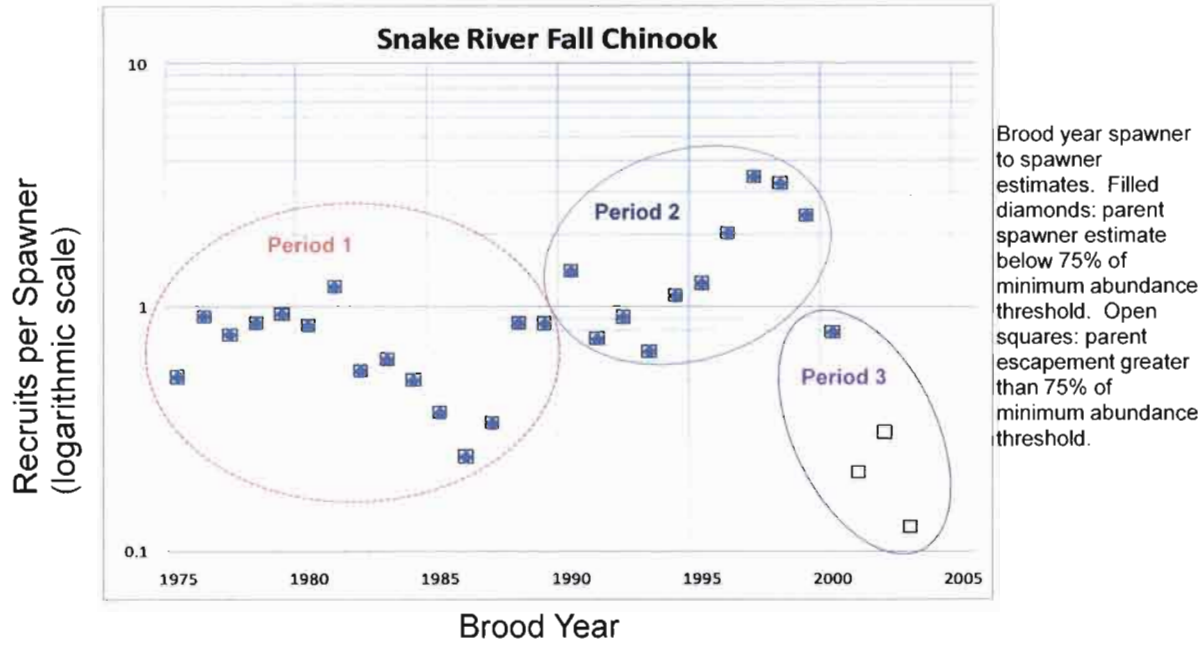

Figure 2. Recruits per spawner estimates for Snake River fall Chinook by brood year. Period 1 denotes the brood years prior to proposed listing under the Endangered Species Act; Period 2 denotes the brood years that were affected by measures to improve their survival (most notably the provision of stable spawning flows from the Hells Canyon Complex, cool-water releases from Dworshak Dam on the Clearwater River, and supplementation with hatchery fish by the Nez Perce Tribe); and Period 3 denotes recent years in which the productivity of naturally produced fish has declined after adult spawner abundance generally exceeded 10,000 adults. Source: NMFS – Northwest Fisheries Science Center "Salmon Population Database: https//www.webapps.nwfsc.noaa.gov/ and NMFS unpublished data. NOAA Tech Memo NMFS-NWFSC-66. Good et al. 2005. Updated Status of Federally Listed ESU's of West Coast Salmon and Steelhead. 598 p. June 2005.

The authors also note that the upper reach is narrow and rearing habitat is relatively limited; predation in the upper reach is the most likely cause of the observed mortalities; redd counts and Lower Granite reservoir temperatures are the best predictors of smolt growth rates; and smolt growth decreased as hatchery release number increased. Taken together, this information provides strong, though preliminary, evidence for a density-dependent response in the apparent mortality of naturally produced subyearling Chinook from the upper Hells Canyon Reach.

In other words, the abundance and productivity of naturally produced SR fall Chinook in this reach does not appear to be limited by water temperatures in the reach, but by the amount of quality juvenile rearing habitat (space) available in the reach. Reduction of water temperatures during the fall migration/spawning season, as proposed by IPC, would have no effect on the habitat available to juvenile SR fall Chinook which inhabit the river from the time of emergence (March and April) through emigration (May through August). However, as we describe in more detail below, the water used to change the water temperature downstream could have significant adverse effects on SR fall Chinook and their critical habitat.

NMFS agrees with Connor and Tiffan's assessment that the population of SR fall Chinook downstream from Hells Canyon Dam is likely approaching the carrying capacity of available juvenile habitat.[3] Given that this population growth has taken place under the existing water temperature regime, we conclude that the current water temperature regime is not limiting the SR fall Chinook population downstream from the project, and that reduction in fall water temperatures to comply with the established water temperature criteria would not be likely to substantially improve the abundance or growth rate of the population.[4]

The available habitat is supporting all the juvenile fall Chinook it can, or nearly so. To further increase the abundance of fall Chinook, additional suitable habitat would have to become available. From the perspective of benefiting SR fall Chinook, the most effective way to achieve this would be to improve the upstream historical habitat and make reintroduction above the project a viable option. This would result in two populations, and be a very significant action to further NMFS's goal of recovery of Snake River fall Chinook.

Temperature Enhancement Mitigation Program (TEMP) Proposal (upstream habitat improvement)

With over 1 million acre-feet of storage, and active seasonal storage and withdrawal operations, the HCC creates thermal inertia effects (slow to warm in the spring, slow to cool in the fall) and a cropping of annual peak and minimum temperatures in the discharge stream. This effect results in the project exceeding specified water temperature criteria at the beginning of the specified spawning season (October 23 through April 15).

In 2003, IPC submitted its initial request for certification under Section 401 of the Clean Water Act and has withdrawn and resubmitted its application six times since, primarily in response to the water temperature issue. Earlier in this process, IPC proposed to meet its water temperature responsibilities by reducing the heat input to Brownlee reservoir by implementing an upstream water temperature remediation program termed TEMP. The TEMP program shared many similarities with NMFS's recommended upstream habitat improvement program. Although focused primarily on water temperature reduction, TEMP included a number of measures in the suite of possible actions that would also reduce nutrient and sediment loading (e.g. land fallowing, water leasing, and irrigation return flow artificial wetland development). By reducing nutrients and sediment loads as well as water temperatures, TEMP would benefit reintroduced SR fall Chinook by reducing sedimentation and algal blooms in the river above the HCC. Poor intergravel

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[3] Another hypothesis is that high proportions of hatchery spawners are resulting in less fit juveniles and decreased productivity of the naturally produced segment of the ESU. While this hypothesis has not been disproved, there appears to be little causal evidence to support it.

[4] Although there is no strong indication that temperatures in the Hells Canyon reach of the Snake River are negatively affecting adult SR fall Chinook in any substantial way, cooler fall water temperatures could potentially result in lower pre-spawning mortality among returning adults and earlier initiation of spawning (assuming attainment of temperatures around 16 degrees C occurred earlier in the season and adults began spawning at that time). This would not increase the amount of available habitat, and therefore would not address the underlying need for additional habitat.

flow, caused by algae and sedimentation, has been identified as a causal agent for the poor egg-to-fry survival documented during IPC's reintroduction studies. Although the TEMP proposal was less focused on fish habitat improvements than NMFS' 10(j) recommendation, and IPC proposed a lower level of funding, NMFS strongly supports the adoption of a TEMP-like program because it would accelerate the attainment of water quality conditions necessary for the reintroduction of SR fall Chinook salmon into historically productive habitat.

IPC's Temperature Control Structure (TCS) Proposal

IPC's most recent 401 application proposes to meet ODEQ's numerical water temperature standard for spawning salmon by pumping cooler water from deep in Brownlee reservoir into the intake channel for the Brownlee powerhouse, cooling the discharge to the Snake River at Hells Canyon Dam. This plan itself causes NMFS concern due to water quality issues associated with nutrients and toxics; however, it does not cause us concern with respect to temperature. NMFS currently considers juveniles to be the limiting life-stage of the SR fall Chinook population and juveniles reside in the river only from emergence (March-April) through emigration (May-July) and thus would be unaffected by the proposed TCS. The proposed TCS would not provide any additional spawning and rearing habitat, which is what is needed to benefit the species at this point. NMFS does not believe that meeting spawning water temperature standards would appreciably increase either the abundance or the productivity of the spawning aggregate in the Hells Canyon reach of the Snake River.

We are also concerned that by entraining water from depth in Brownlee reservoir into the discharge stream from the project, additional risks to the existing SR fall Chinook population and its critical habitats would be incurred. These risks include low dissolved oxygen concentrations, high nutrient (nitrogen and phosphorus) concentrations resulting in high biological oxygen demand, and toxins (DDT and other pesticides and herbicides and heavy metals, particularly methyl-mercury). These conditions result from the extremely high nutrient loads entering Brownlee reservoir, and the biological and chemical processing of these nutrients within the reservoir. IPC would need to mitigate for the dissolved oxygen, nutrients and toxics levels to avoid adverse impacts to anadromous fish and critical habitat.

Natural Seasonal Temperature Pattern Standard

As shown above, the abundance of SR fall Chinook has improved substantially since their listing under the Endangered Species Act, to the point that the population is now limited by available physical habitat for juveniles. This increase in SR fall Chinook abundance has occurred during the current water temperature regime. It is NMFS' view that the current water temperature regime downstream from Hells Canyon Dam is more beneficial to SR fall Chinook than the natural regime, primarily due to warmer fall and winter water temperatures that accelerate fry emergence.

Assuming the same spawn timing distribution, NMFS substantively agrees with IPC's assessment that; 1) emergence would be delayed by about two weeks under the natural water temperature regime, compared to the current thermal regime, and 2) that current SR fall Chinook emergence timing in the extant Snake River habitat is similar to that which would be expected in the historically productive Marsing reach upstream of the project.

We believe that modifying discharge water temperatures to meet the NSTP standard would incur larger risks than potential benefits for Snake River fall Chinook. As discussed above, we have several concerns about the approach proposed by IPC to meet the fall spawning numeric water temperature criteria. The proposal incurs risks to the SR fall Chinook ESU that are made more compelling because the ESU consists of a single population, largely dependent on the Hells Canyon reach of the Snake River and the operations of the Hells Canyon Complex.

Conclusions

1. While NMFS generally supports the use of the NTSP standard, the application of this standard to the Hells Canyon Project would likely not appreciably improve either the abundance or productivity of SR fall Chinook because limited juvenile rearing habitat (after emergence in the spring) appears to be the primary limiting factor for SR fall Chinook in the Hells Canyon reach of the Snake River.

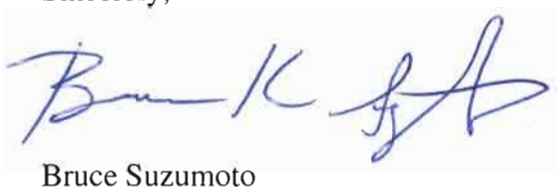
2. The potential adverse effects of IPC's water temperature mitigation plan need to be well-defined and adequately mitigated. Defining these effects could be accomplished through modeling of the chemical, physical, and biological processes in the two downstream reservoirs, and in the free-flowing Hells Canyon reach. Once these effects are defined, they need to be mitigated to avoid adversely affecting SR fall Chinook and their critical habitat.

3. Restoring historical upstream habitat for Snake River fall Chinook salmon to the point where it will again be able to support spawning and rearing is the most effective action for improving survival and recovery, by creating conditions for successful upstream reintroduction.

4. Lastly, river temperatures upstream of, and within Brownlee reservoir have been, and will continue to be altered by global climate change. We advice that it would be prudent to model how expected increases in air temperatures and altered hydrology over the coming decades are likely to affect the volume of cool-water within Brownlee Reservoir that the proposed structure relies upon. These results would likely inform the DEQs' views as to the longer-term efficacy of the proposed structure.

Thank you for the opportunity to comment. Please contact Keith Kirkendall at 503-230-5431, Keith.Kirkendall@noaa.gov of my staff if you have any questions.

Sincerely,



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Hydropower Division